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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/604,253

07/07/2003

Cheng-Lung Lee

ACMP0087USA

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05/31/2005

NORTH AMERICA INTERNATIONAL PATENT OFFICE (NAIPC)

P.O. BOX 506

MERRIFIELD, VA 22116

EXAMINER

NGUYEN, LAM S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/604,253	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> LAM S. NGUYEN	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2005.  
 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 16-20 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-10 and 16-20 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 07 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

The indicated allowability of claims 1 and 16 is withdrawn in view of the newly discovered reference(s) to Tajika et al. (US 6457794) and Koyama (JP 411245485A). The rejections are made as follows:

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

1. Claims 1-2, 6, 8, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tajika et al. (US 6457794) in view of Koyama(JP 411245485A).

Tajika et al. discloses a printing apparatus comprising:

a printhead for ejecting ink from a plurality of nozzles (*FIG. 2A*), the printhead comprising:

a substrate (*FIG. 2A, element 11*); and

a plurality of heaters (*FIG. 2A, element 1*) arranged on the substrate for heating ink in the printhead to generate bubbles in the ink and eject the ink through the corresponding nozzles;

a signal generator for generating printing pulses (*FIG. 9 and 45 element P3*) and non-printing pulses (*FIG. 9 and 45, element P1*) used to control the heaters, the printing pulses controlling the heaters to generate sufficient heat energy to eject ink from the nozzles for printing data (*column 9, lines 2-6*), and the non-printing pulses controlling the heaters to generate heat

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energy that is not sufficient to eject ink from the nozzles for raising a temperature of the ink (*column 8, lines 59-65*);

a control circuit for varying the non-printing pulses generate by the signal generator according to temperature of the printhead (*FIG. 9 and column 13, lines 23-30: A corresponding controller that modulates the pulse width of pulse P1 in accordance to the printhead temperature*).

Tajika et al. does not disclose a print data comparator for comparing a percentage of data printed during a predetermined of time with a threshold value. In addition, even though Tajika et al. teaches that the pulse width of pre-pulse P1 (non-printing pulse) is modulated in accordance to the printhead temperature; particularly, the pulse width of the non-printing pulses is narrower when the temperature is higher (*FIG. 22*) (**Referring to claims 2, 8, 17**). However, Tajika et al. does not disclose wherein the non-printing pulse is varied in accordance to the percentage of data printed during the predetermined period of time and the threshold value.

Koyama discloses an ink jet thermal printing apparatus having a print data comparator (*Abstract*) for comparing a percentage of data (*number of counted recorded dots*) printed during a predetermined of time with a threshold value (*the stored predetermined value*) and the printing process is carried out if the comparison result exceeds the threshold value (*Abstract*), wherein higher the number of counted dots (*percentage of printed data*) in a period of time is, more heat is generated; as a result, the temperature is raised (*paragraph [0002]*). In other words, the increasing in the printhead temperature is due to the accumulated heat generated by the ink ejection that is in relationship with the percentage or amount of printed data (*Note: The*

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*percentage of data can be derived from the number of counted dots and the number of dots predetermined and stored if the stored predetermined dots is considered as 100%).*

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the printing apparatus disclosed by Tajika et al. such as modulating the non-printing pulse in accordance to the output of the comparator that indicating the temperature gain due to the actual number of printed dots as disclosed by Koyama. The motivation for doing so would have been to control the printing process based on the contents of print data existed rather than by the temperature itself in order to gain accuracy as taught by Koyama (paragraph [0005]).

**Tajika et al. also discloses the following claimed inventions:**

**Referring to claim 6:** a temperature sensor for measuring a temperature of the substrate and a temperature comparator for comparing the temperature of the substrate with a reference temperature (*FIG. 26B*).

2. Claims 3-5, 7, 9-10, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tajika et al. (US 6457794) in view of Koyama (JP 411245485A), as applied to claims 1 and 16, and further in view of Dunn (US 4982199).

Tajika et al., as modified, discloses the claimed invention as discussed above, except wherein the control circuit modulates the non-printing pulses by varying a number, a frequency, or a voltage of the non-printing pulses.

Dunn discloses a thermal ink jet pen driven by a signal having a number of non-printing pulses (*warming pulses*) and a printing pulse (*firing pulse*) (*Abstract*), wherein the number of non-printing pulses (*FIG. 3C-3D*), the voltage of the non-printing pulses (*FIG. 3A*), or the

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frequency of the non-printing pulses (*FIG. 3C-3D*) is varied to control the temperature of the ejection of the pen.

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the controller disclosed by Tajika et al., as modified, to modulate the non-printing pulses by not only adjusting the pulse width, but also by varying the voltage, the number of pulses, or the frequency of the pulses as disclosed by Dumm. The motivation for doing so would have been that they are the equivalent methods as well known in the art to form driving pulses having different shape but providing the same power energy.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN  
05/25/2005

*Hai Pham*  
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PRIMARY EXAMINER